

## Warm Up

Edit

Reset

?

Rational

Irrational

$\frac{1}{3}$

15

0.87878787 ...

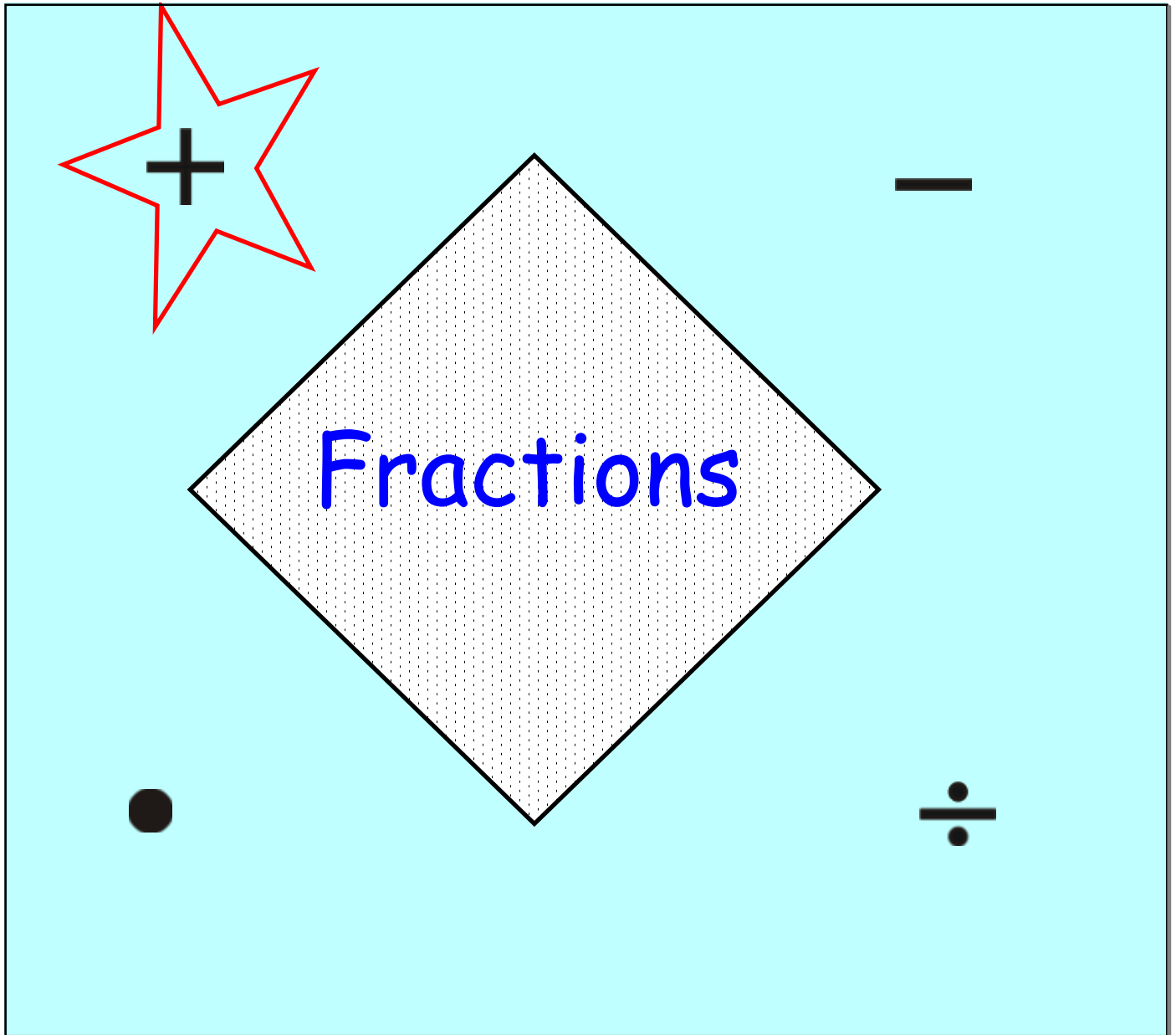
3.07

9.038217...

sq rt of 13

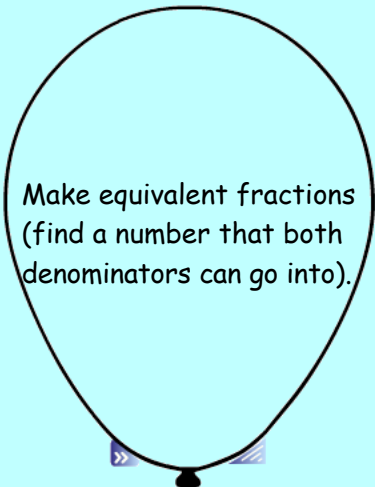
58.6192743...

pi

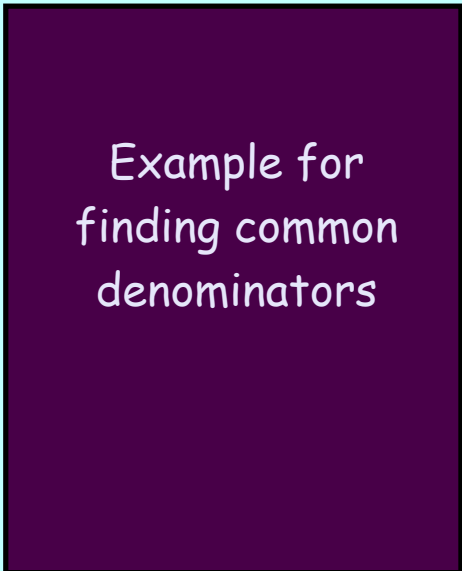


## Adding Fractions

You **MUST** get common denominators.



Make equivalent fractions  
(find a number that both  
denominators can go into).



Example for  
finding common  
denominators

**Edit** **Reset** **?**

## Adding Fractions

- 1 Find common denominators.
- 2 Add the numerators.
- 3 Bring down the denominator.
- 4 Add whole numbers (if have them).
- 5 **SIMPLIFY!**

Examples:

$$1) \begin{array}{r} \frac{7}{9} \\ + \frac{2}{3} \\ \hline \end{array}$$

$$2) \begin{array}{r} 2\frac{2}{3} \\ + 1\frac{2}{5} \\ \hline \end{array}$$

$$3) \begin{array}{r} 7\frac{4}{7} \\ + 3\frac{5}{6} \\ \hline \end{array}$$

$$10 \frac{59}{42}$$

$$11 \frac{17}{42}$$

SOLVE

$$1. \quad x - 6\frac{1}{5} = 13\frac{7}{10} = \frac{7}{10}$$

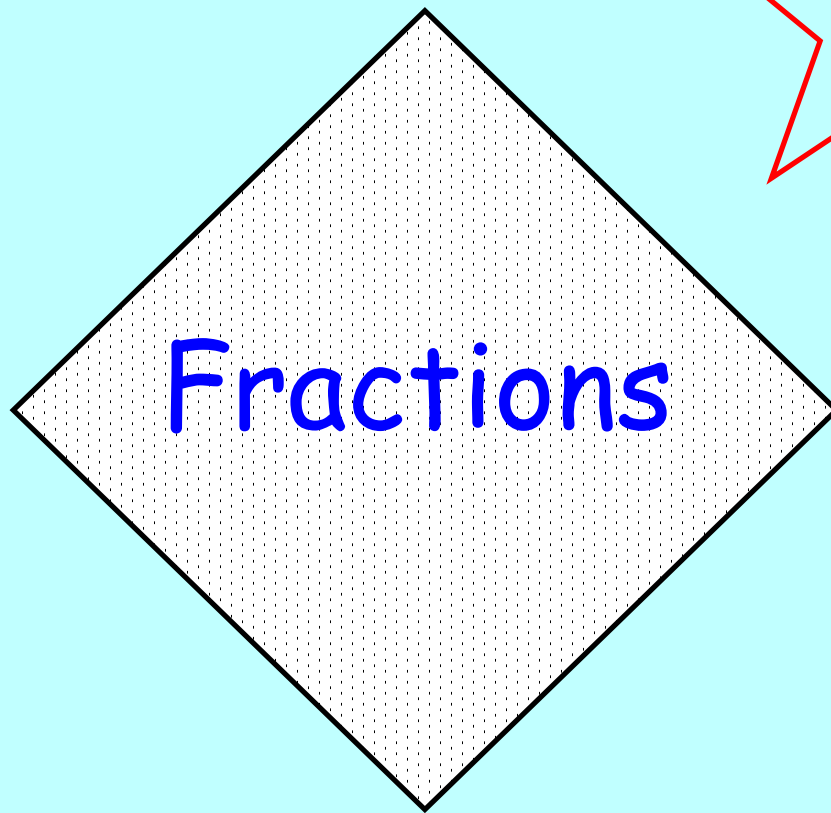
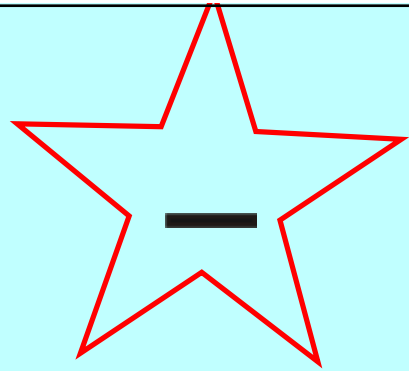
$$+ \cancel{6\frac{1}{5}} + 6\frac{1}{5} = \frac{2}{10}$$

$$x = 19\frac{9}{10}$$

$$2. \quad x - 4\frac{3}{4} = 2\frac{1}{2}$$

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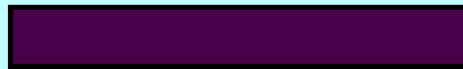


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## Subtracting Fractions

You **MUST** get common denominators!



Only TWO differences between adding and subtracting.



1) You subtract instead of add.



2) You might need to borrow from the whole number.

Examples:

$$\begin{array}{r} 1) \quad 7\frac{3}{4} \\ - 3\frac{1}{2} \\ \hline \end{array}$$

$$2) \quad 14\frac{11}{12}$$

$$- 9\frac{1}{5}$$


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$$3) \quad 8\frac{2}{3} = \frac{6}{9}$$

$$- 6\frac{5}{9} = \frac{5}{9}$$


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$$2\frac{1}{9}$$

Examples:

$$\begin{array}{r} 4) \ 2\frac{1}{15} \\ - \frac{1}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 5) \ 11 \\ - 3\frac{4}{7} \\ \hline \end{array}$$

$$\begin{array}{r} 6) \ 9\frac{5}{6} \\ - 7\frac{5}{18} \\ \hline \end{array}$$

Solve

1.

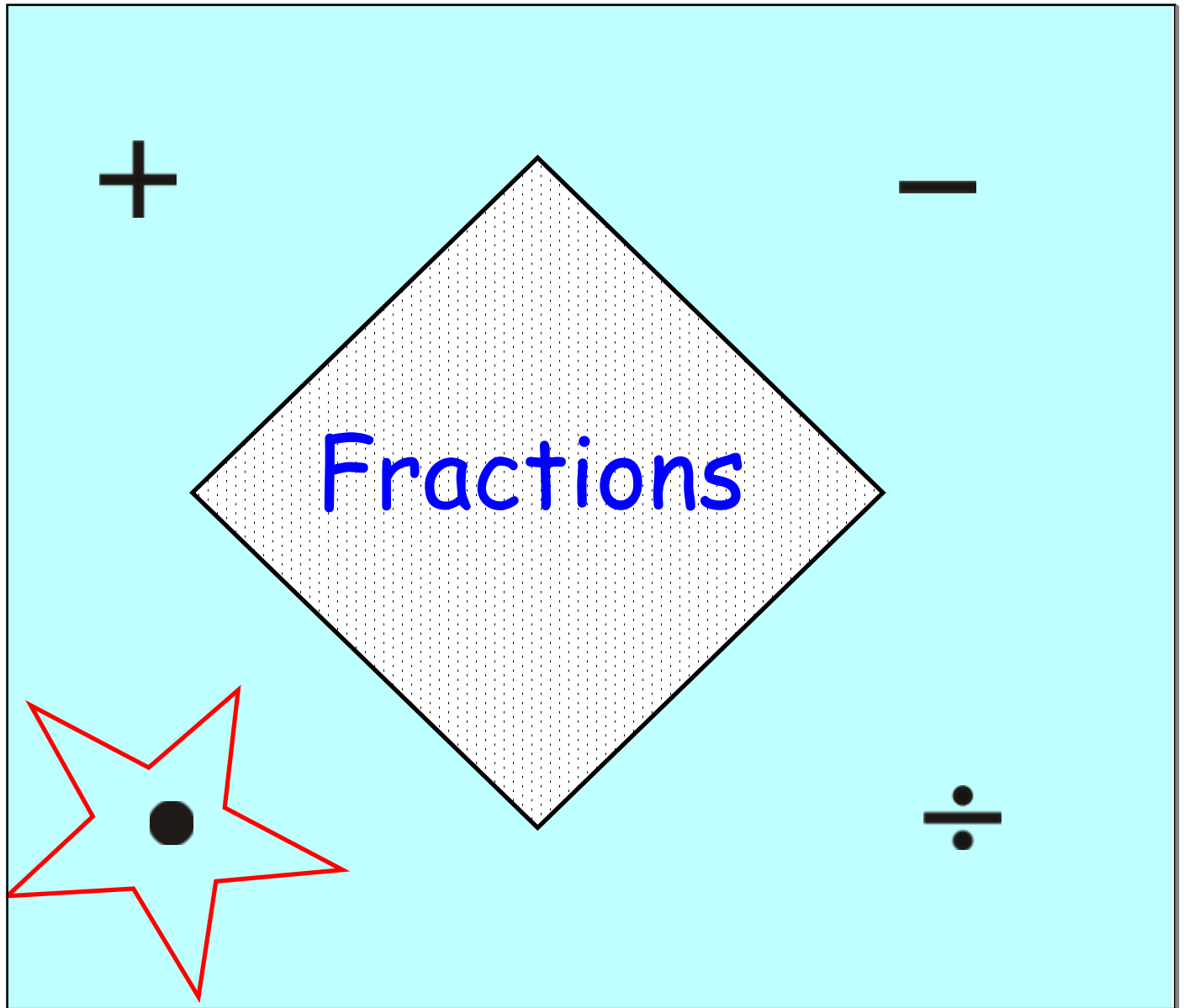
$$5\frac{5}{6} = m + 3\frac{1}{3}$$

2.

$$\begin{array}{rcl}
 m + 4\frac{3}{4} & = & 9\frac{1}{2} \\
 \cancel{4\frac{3}{4}} & & \cancel{9\frac{1}{2}} \\
 m & = & 5\frac{1}{4}
 \end{array}$$

Handwritten work for problem 2 shows the equation  $m + 4\frac{3}{4} = 9\frac{1}{2}$ . The left side is crossed out with a green line, and the right side is converted to  $9\frac{2}{4}$  (with a blue '8' above the '9' and a blue line through the '9'). Then,  $4\frac{3}{4}$  is subtracted from both sides, resulting in  $m = 5\frac{1}{4}$  (with a red '2' above the '5' and a red line through the '5').

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## Multiplying Fractions

YEA! NO common denominators for multiplying!



There are 2 different ways to solve multiplication. You pick the one that makes sense to you!

## Method #1 - Multiply then simplify

**Step 1**      **Convert all mixed numbers and whole numbers into improper fractions.**

**Step 2**      **Multiply the numerators.**

**Step 3**      **Multiply the denominators.**

**Step 4**      **Simplify.**

$$1) \frac{1}{3} \bullet \frac{4}{11}$$

$$2) 3\frac{3}{5} \bullet 6\frac{1}{2}$$

What should I consider about this method?

Pro: simple

Con: could end up with large numbers



## Method #2 - Cross simplifying

- Step 1**      **Convert all mixed numbers and whole numbers into improper fractions.**
- Step 2**      **Cross simplify.**
- Step 3**      **Multiply the numerators.**
- Step 4**      **Multiply the denominators.**
- Step 5**      **Simplify.**

$$3) \ 2\frac{2}{7} \bullet 4\frac{3}{8}$$

$$4) \ 7 \bullet 2\frac{1}{4}$$

What should I consider about this method?

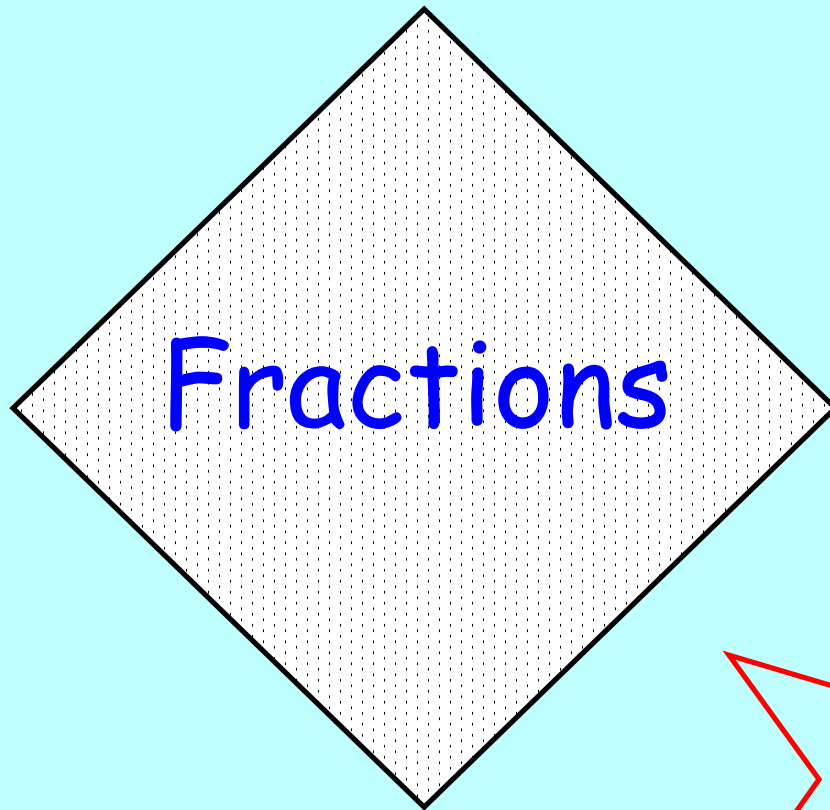
Pro: less/smaller simplifying in the end

Con: some find it confusing

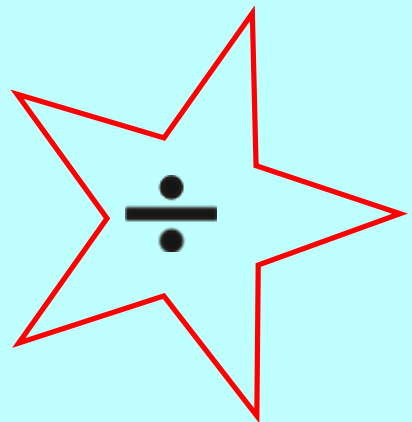
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## Dividing Fractions

YEA! NO common denominators for dividing!



- Step 1**      **Convert mixed numbers and whole numbers into improper fractions.**
- Step 2**      **Leave first fraction alone.**
- Step 3**      **Change division to multiplication.**
- Step 4**      **Get the reciprocal of the second number (flip the second fraction).**
- Step 5**      **Follow your multiplication steps.**

Examples:

1)  $\frac{5}{6} \div 2\frac{1}{4}$

2)  $4 \div 2\frac{5}{6}$

3)  $8\frac{1}{7} \div 4$

4)  $10\frac{1}{3} \div 5\frac{2}{5}$

### **Flip It**

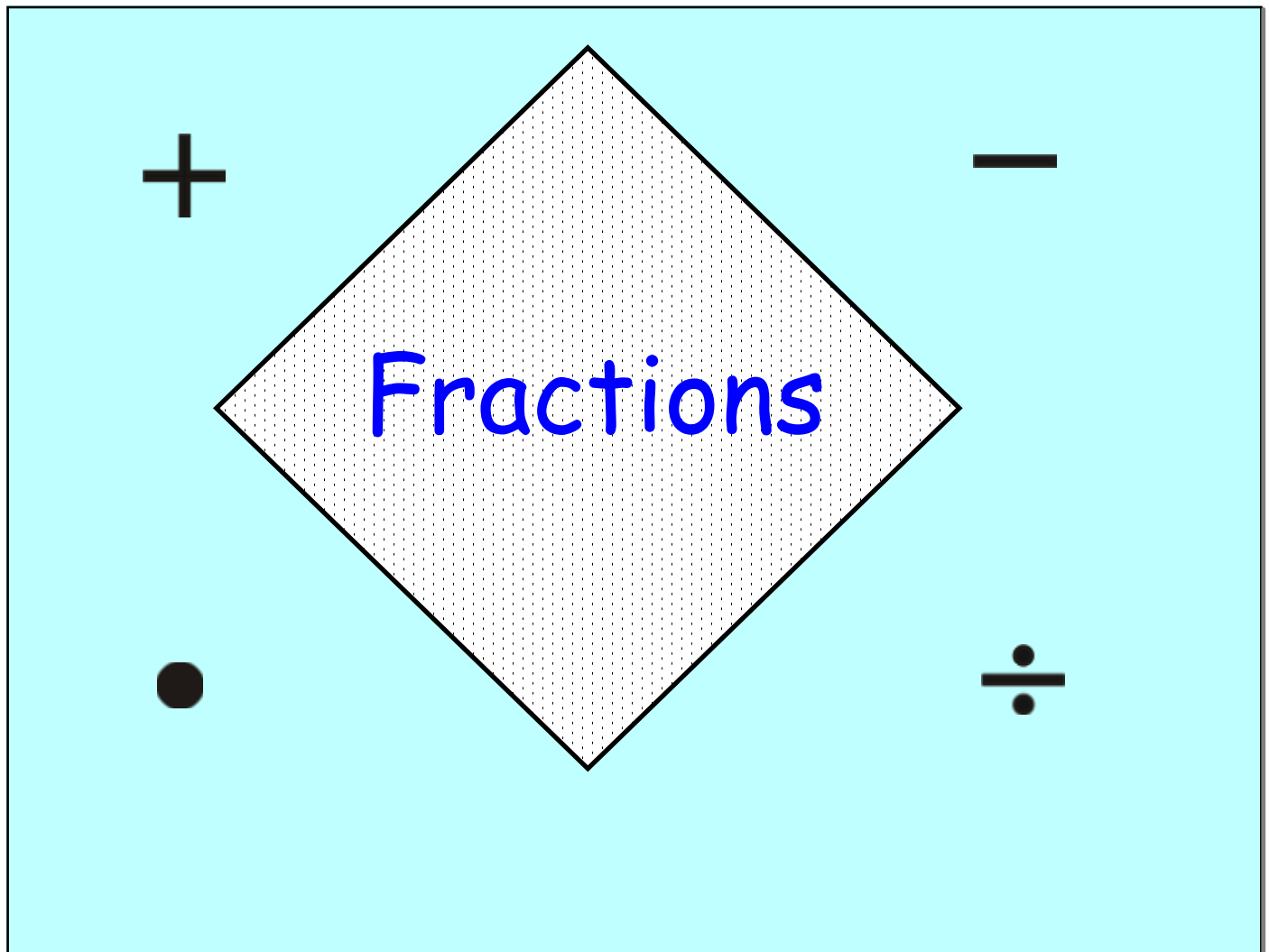
Flip that frac  
Flip the second frac  
Go ahead and flip  
C'mon don't you slack

When division comes along – **you must flip it**  
Now division can't go on – **unless you flip it**  
Your answer will be wrong – **if you don't flip it**

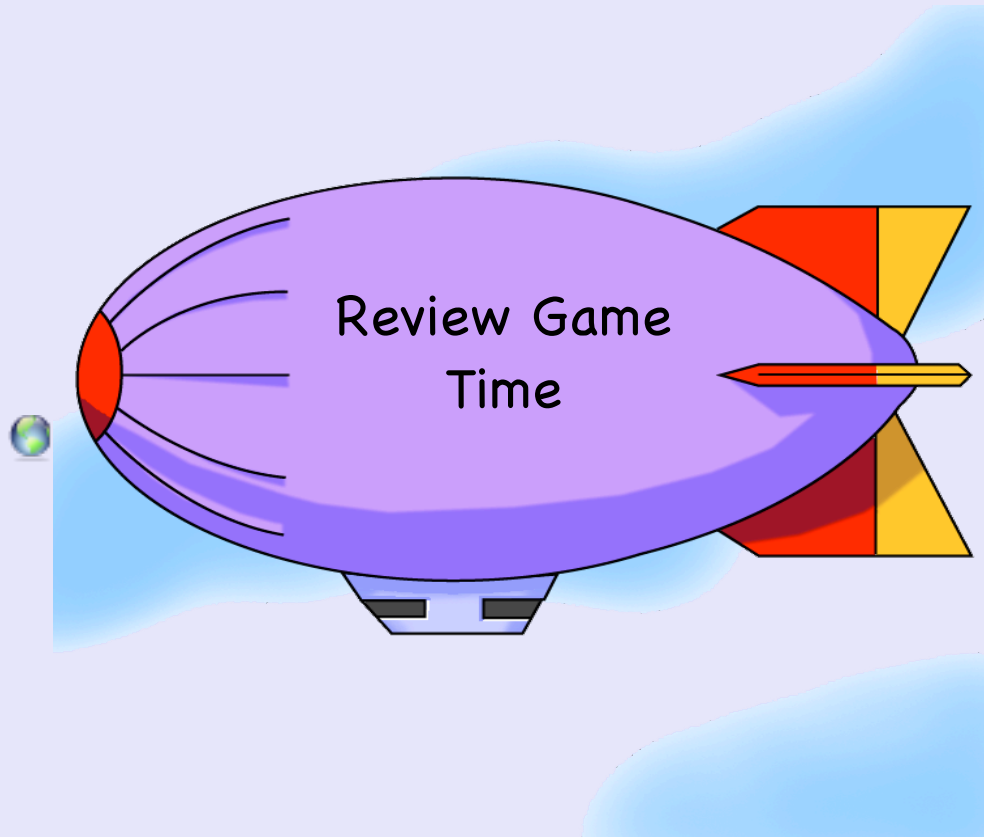
Flip it  
Into shape  
Shape it up  
Get straight  
Go forward  
Move ahead  
Try to divide it  
It's not too late  
To flip it  
Flip it good



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**Planner Time!!**